Impact of waiting time on the relationship between service quality and patient satisfaction at the ambulatory surgery center

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Abstract

Previous research conducted in several hospital settings suggested a positive impact of service quality on patient satisfaction. However, studies have also indicated a negative correlation between waiting time and satisfaction. Attention for these measurements in day surgery is relevant. Two hundred and ninety one patients in a day surgery center participated. The service quality dimensions have a significant effect on patient satisfaction, except for interpersonal quality. Patient satisfaction positively influences patients' behavioural intentions. Perceived high technical quality, high administrative quality, and low waiting time leads to higher patient satisfaction, which enhances patients' behavioural intentions.

Keywords: Service satisfaction, Waiting time, Hospital

Introduction

Hospitals are moving away from a supply-driven view towards a more patient-centered view with a focus on patient outcomes (Porter & Lee, 2013). Service quality and patient satisfaction are key metrics in these efforts (Johnson, Russell, & White, 2016). Results about patients' expectations concerning service quality and patient satisfaction are becoming more and more publicly available. These results are not only useful for the patient to make an informed choice in healthcare provider, capturing the voice of patients is also valuable to provide managers with data required to make well-informed decisions (Johnson, Russell, & White, 2016). As such, failure of understanding the importance of

the two concepts service quality and patient satisfaction could result in a possible loss of patients (Jandavath & Byram, 2016). Previous research in several hospital settings suggested a positive impact of service quality on patient satisfaction (Pevec & Pisnik, 2018). In turn, receiving high levels of patient satisfaction turns out to be desirable as patient satisfaction appears to have a positive impact on behavioral intentions (such as patients' loyalty and word of mouth) (Jandavath & Byram, 2016; Mohamed & Azizan, 2015). For example, a disgruntled patient often tells others, leading to a negative effect on the organization as a whole (Tasso, 2002).

The relationships between service quality, patient satisfaction and behavioral intentions are often addresses in literature. However, the evidence in surgical day care remains limited. Day surgery has steadily and significantly grown in countries with well-developed economies in the last decades (Leroy et al. , 2017). Undoubtedly, these settings become more and more important.

In today's fast-paced society, time is a valuable aspect for everyone, including the patient. According to Lovelock and Gummesson (2004) time plays a central role in most service processes and therefore they recommend more research on how customers perceive time. Studies in the healthcare sector have shown a significant negative correlation between waiting time and satisfaction: the longer waiting times, the lower patient satisfaction (Leddy, Kaldenberg and Becker, 2003; Hung-Che, 2016). In particular, long waits for scheduled procedures can be both frustrating and agonizing for patients (Leddy et al., 2003). The length of waiting times is the most frequently mentioned complaint of patients in surgical day care, with potential to induce additional stress for those patients already nervous (Freeman & Denham, 2008).

In this perspective, the purpose of this study is twofold: (1) to propose a model showing the functional relationships among patient satisfaction and related variables based on past research combined with time-related patients' experiences; (2) to test this in a growing health care market segment, namely day care surgery where research on this topic is limited.

Conceptual framework

Service quality

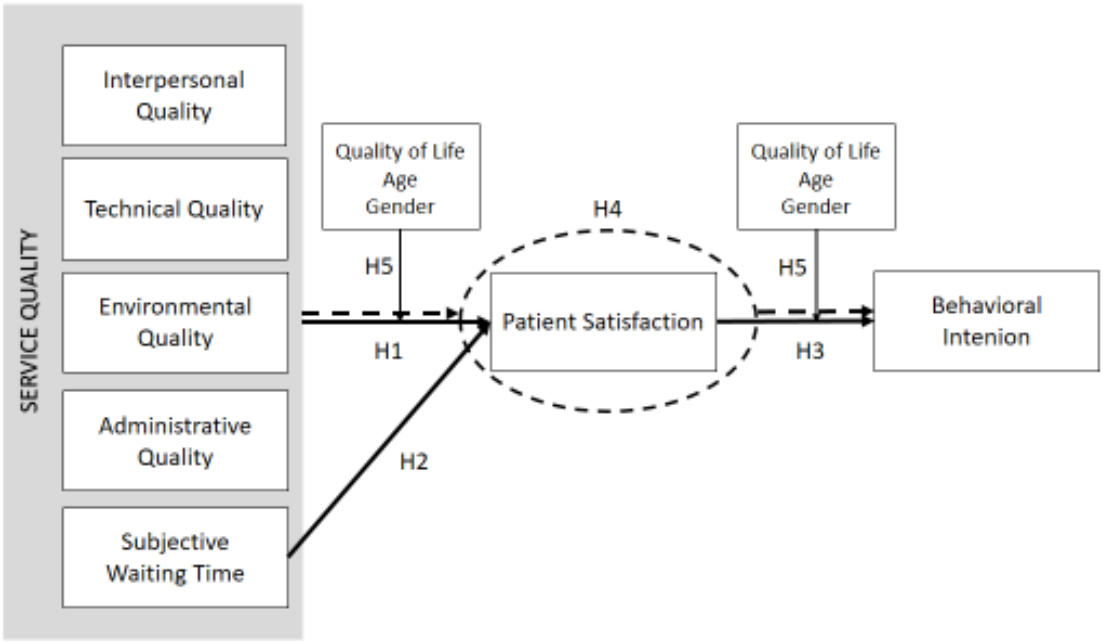
Perceived service quality can be defined as the consumer's judgement about an entity's overall excellence or superiority (Dagger, Sweeney, & Johnson, 2007). Grönroos (1984) introduced expectations as a reference against which performance could be judged. Parasuraman et al. (1985) stated this as the result from a comparison between consumers' expectations of service and perceived service.

Patient satisfaction

Patient satisfaction can be defined as an emotional response after experiencing the various hospital quality aspects such as technical, functional, infrastructure, interaction and atmosphere (Dagger et al., 2007).

Several studies have been carried out to gain insights in the relationship between service quality and patient satisfaction since each covers a different content. A positive influence of service quality on patient satisfaction is suggested in the literature (Moreira & Silva, 2015; Pevec & Pisnik, 2018). Consequently, the next hypothesis was developed for surgical day care:

Hypothesis 1: The four main dimensions of service quality, being administrative quality, technical quality, interpersonal quality and environmental quality, influence patient satisfaction in surgical day care.



Full arrows show the main (and moderating) effects, the dotted line illustrates the mediation effect.

Figure 1: Conceptual framework with hypothesized relationships between the constructs.

Timeliness – Waiting time

Patients' waiting time is an important indicator for quality of hospital services. As such, hospitals should focus on reducing the waiting times and delays for the patient (Oche, 2013). Patients perceive long waiting times as a barrier to actually obtaining services. Unnecessarily keeping patients waiting can be a cause of stress for both patient and physician (Leddy et al, 2003) In addition, long waiting times can be interpreted and thereby perceived as poor organization and of a lack of respect for the patient. This can all have financial consequences for the healthcare institution itself when patients go elsewhere after a negative experience regarding waiting time.

Time has been a critical variable in many research topics (e.g., management, marketing). Moreover, the perspective of subjective time becomes increasingly dominant over the years (Carlson, 2018). It is therefore a logical choice to separate time from the dimension administrative quality which enhances processes and support. Taking this into account, we consider timeliness (i.e. waiting time) as a fifth main dimension, which leads to the following hypothesis:

Hypothesis 2: Waiting time influences patient satisfaction in surgical day care.

Behavioral intentions

Zeithaml et al. (1996) defined behavioral intentions as indicators that signal whether customers will maintain or cease the relationship with the service provider. They identified two dimensions to measure behavioral intentions. These were favorable and unfavorable behavioral intentions. Favorable behavioral intentions refer, for example, to positive worth of mouth, repurchase intentions and loyalty (Ladhari, 2009). However, unfavorable behavioral intentions include, for example, negative worth of mouth and leaving the service provider (Ladhari, 2009). The relationship between patient satisfaction and behavioral intentions has been an important topic in the literature. A significant

impact of patient satisfaction on behavioral intentions is indicated in many studies (Dagger & Sweeney, 2007; Jandavath & Byram, 2015; Mohamed & Azizan, 2015). In this research, the relationship between patient satisfaction and behavioral intentions will be reinvestigated in surgical day care with next hypothesis to investigate:

Hypothesis 3: Patient satisfaction affects patients behavioral intentions in surgical day care.

As previous healthcare research supports the hypothesis that service quality has a significant impact on satisfaction, and satisfaction on behavioral intentions, we follow the rational that patient satisfaction mediates the relationship between the service quality dimensions and behavioral intentions.

Hypothesis 4: Patient satisfaction mediates the relationship between the four main dimensions of service quality, being administrative quality, technical quality, interpersonal quality and environmental quality), and behavioral intentions.

Quality of life, age and gender

Previous research identified differences in patient satisfaction among several demographic variables (Afzal et al., 2014). Consequently, it is useful to look if these relationships are also significant in surgical day care and to explore if they strengthen the relationship between service quality and patient satisfaction or between patient satisfaction and behavioral intensions.

Hypothesis 5: The relationship between service experience and patient satisfaction will be influenced by quality of life, age and gender.

Methods

Procedure and participants

A cross-sectional study design was employed to investigate the predetermined hypotheses and patients were selected through convenience sampling. The questionnaire was distributed at the surgical day care department of one hospital in the Flemish region of Belgium. Three hundred seventeen patients filled out the questionnaire with a corresponding response rate of 91%. The 317 questionnaires were reduced to 291 valid responses due to the incompleteness of several surveys.

Measures

In addition to questions regarding demographics (age, gender, living status,…) the questionnaire involved six different constructs. Each construct was based upon previously validated instruments. Construct validity and reliability were examined based on previous studies and were found to be adequate. Reponses were provided using a seven-point Likert scale, with anchors ranging from 1 (strongly disagree) to 7 (strongly agree). Based on the responses from the questionnaire, the instrument's reliability was evaluated using SPSS software (Version 24). The resultant Cronbach's α values ranged from 0.83 to 0.95 indicating a satisfactory reliability level, exceeding the level commonly required for exploratory research.

Analytic approach

To assess the psychometric properties of the measurement scales and to test the hypothesized relationships, Structural Equation Modelling (SEM) with R Lavaan was used for parameter estimation and evaluation of the proposed model (Rosseel, 2002). The P-values were reported as two-tailed with a significance level (α) of 0.05.

Ethical consideration

The study protocol was approved by a university-affiliated ethical institution (n°B70201838168). Patients were free to participate and were informed before the informed consent was signed.

Constructs

The validated survey of Dagger et al. (2007) was used to assess service quality, patient satisfaction, behavioral intentions and waiting time. The service quality scale contains four dimensions consisting of interpersonal, technical, environment and administrative quality. The dimension of the interpersonal quality contained questions about the interaction and relationships with the staff and the outcomes and the expertise were questioned in the technical quality. Further, the environment quality contained information on the tangibles and atmosphere. Operations and support were questioned in the dimension concerning the administrative quality. Timeliness contained questions about perceived waiting time, these questions where extracted from the dimension administrative quality. Satisfaction of the patients was gathered through information about the feelings towards the surgical day care unit, satisfaction towards the services, satisfaction about the results and the feeling of coming to the surgical day care unit.
The behavioral intentions included amongst others, recommending the care, returning to the surgical day care unit, telling positive things, the desire to change of hospital and feeling glad the treatment took place in the surgical day care unit.

Quality of life was measured using the World Health Organization Quality of Life BREF survey (WHOQOL-BREF) developed by the World Health Organization (1996).

Results

Of the 291 patients, 43% (n= 124) were male and 57% (n=167) were female. Mean age was 49.3 (stdv 17.20).

Mediation analysis

The first analysis was performed on the basic model, which is the model that excluded all key moderators. This model was used to test hypotheses 1, 2, 3 and 4 and analysed the relationships between the major variables. The results of the SEM analysis and mediation analysis are shown in Table 1.

The results support the hypotheses using the basic model (i.e., H1, H2, H3, and H4), except for the relationship between ‘interpersonal quality’ and ‘patient satisfaction’. Strong relationships were noticed between the following constructs: ‘environmental quality’, ‘administrative quality’ and ‘patient satisfaction’, and between ‘patient satisfaction’ and ‘behavioral intentions’. The link between the constructs ‘technical quality’, ‘waiting time’ and the construct ‘patient satisfaction’ was less strong but still highly significant. With regard to the mediators in the basic model, we observed that ‘patient satisfaction’ acted as a full mediator for the link between the constructs ‘administrative quality’, ‘waiting time’, and partially for the construct ‘environmental quality’ and the ‘behavioral intentions’ as dependent variable.

Moderation analysis and covariates

In the second analysis, the covariates were added to the model. These covariates were added to the model to allow these variables to be examined as moderators. More specifically, they were tested as moderators of (1) the link between service quality and patient satisfaction and (2) between patient satisfaction and behavioural intentions. This

analysis tested the remaining hypothesis 5. The results of the moderation analysis are presented in Table 2. The results found partial support for the hypothesis 5.

Discussion

The aim of this study was to test a model based on established relationships among four key constructs (service quality, waiting time, patient satisfaction and behavioral intention) in ambulatory surgery. New in this study is the integration of waiting time as a dimension of service quality, as a reduction of preoperative waiting times is a considerable challenge for improvement of quality in healthcare services.

The negative impact of waiting time and its effect on the overall satisfaction is related to patient's expectations (Umar, 2011). However, waiting time, despite its importance for satisfaction, has largely been neglected as a stand-alone concept of service quality. As such, in our research, waiting time was separated from the administrative quality dimension within service quality. Thirteen years after the design of the four-dimensional service quality framework by Dagger et al. (2007) this is bold, but also logical as health care has undergone many changes, such as outpatient care and ambulatory surgery. Above that, patients are evolved with a shift in the concept of 'time'. The current patient takes a great deal of interest in his time, after which (s)he doesn't want to spend it on waiting in the hospital.

The proposed model was strongly supported by the collected data in the present context of surgical day care. Interpersonal quality appeared to be the only quality dimension without a significant impact on patient satisfaction. This finding was not in line with earlier research reported in healthcare literature (Bakan et al., 2014; Zarei et al., 2014). A possible explanation could be that these studies did not always make a distinction between the interpersonal and technical quality of the personnel and aggregated these dimensions into one dimension. However, the nonsignificant impact of interpersonal quality does not imply the unimportance of the staff in surgical day care. This follows from the significant impact of the technical quality dimension on patient satisfaction. This finding indicates that good education, competence and qualifications of the staff do significantly influence patient satisfaction positively. This implies an argument for specific nurse training in ambulatory surgery.

Not only technical quality, but also environment quality were positive predictors of patient satisfaction. Bitner (1992) performed an investigation of the servicescapes in which the impact of physical surroundings on customers and employees was already emphasized in service processes. This was confirmed by other authors for healthcare settings (Alghamdi, 2014; Shabbir et al., 2014). This explains the importance of the physical surroundings, for example, a high incidence of light, a large waiting room, spaces with few angles, walls covered by pictures of nature, attention to the comfort of the seats. This is now confirmed for the surgical day care unit as well.

The administrative processes in the hospital involves both the processes and procedures during admission, residence and dismissal (Curry & Sinclair, 2002). Also waiting time influences patient satisfaction. Delays that are considered unreasonable or unnecessary in the service sector provoke not only dissatisfaction, but also raise anger (Diaz & Ruiz, 2002). However, waiting time is often hard to control in the ambulatory surgery unit due to unexpected changes in the surgery schedule: a surgeon can be delayed to start the day surgery program by emergencies, a surgery can last longer than planned, or several other external causes may lead to an increase in waiting times. Freestanding ambulatory surgery units (with operating rooms exclusively for day surgery) are less vulnerable for changes than hospitals with operating theatres where ambulatory patients

are mixed with inpatients. The ambulatory surgery unit in this study makes use of mixed operating rooms, even on two campuses.

The research findings showed a significant and positive predictive value of patient satisfaction to predict behavioral intentions. Several investigations have already shown similar results (e.g. Jandavath & Byram, 2015; Mohamed & Azizan, 2015). Satisfied patients appeared to be more likely to continue using health services, comply with medical treatment and recommend the health services to others (Hekkert et al., 2009).

The relationship among service quality, patient satisfaction and behavioral intentions is multifaceted (Bou-Llusar et al, 2001). The mediating relationship indicates that the degree of satisfaction/ dissatisfaction with the service experience would change the extent to which previously observed service quality remains a good predictor of patient intentions (Fullerton and Taylor, 2002).

Conclusion

Our study confirms the importance of service quality and patient satisfaction on behavioural intentions in the ambulatory surgery setting. These findings can help health care providers and managers understand how perceived service quality can affect behavioral intentions. As our results show, satisfied patients will intent to return to the hospital, so it is important to provide enough tangible facilities such as physical equipment, to streamline the administration procedure, avoid waiting times and to invest in the skills of the health care providers. This will prevent patients to go to other hospitals.

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Table 1: SEM and mediation analysis

	Direct effect		Indirect effect		Acceptance
	β	**p**	**β**	**p**	
Main effects hypotheses (H1-H2-H3)					
Interpersonal Quality => Patient satisfaction (H1)	-0.006	0.946	-	-	None
Technical Quality => Patient satisfaction (H1)	0.328	0.003	-	-	H1 accepted
Environmental Quality => Patient satisfaction (H1)	0.183	≤0.001	-	-	H1 accepted
Administrative quality => Patient satisfaction (H1)	0.351	≤0.001	-	-	H1 accepted
Waiting time => Patient satisfaction (H2)	0.078	0.011	-	-	H2 accepted
Patient satisfaction => Behavioral intentions (H3)	0.843	≤0.001	-	-	H3 accepted
Mediation analysis with Patient satisfaction as Mediator (H4)					
Interpersonal Quality => Patient satisfaction => Behavioral intentions	0.124	0.081	0.267	0.263	None
Technical Quality => Patient satisfaction => Behavioral intentions	0.135	0.233	0.351	0.193	None
Environmental quality => Patient satisfaction => Behavioral intentions	0.178	0.025	0.401	≤0.001	Partial mediaton
Administrative quality => Patient satisfaction => Behavioral intentions	0.113	0.296	0.542	≤0.001	Full mediaton
Waiting time => Patient satisfaction => Behavioral intentions	0.018	0.688	0.141	0.033	Full mediaton

Table 2: Moderation analysis

Moderators	Direct effect		Interaction effect		Acceptance
	β	p	β	p	
Service quality => Patient satisfaction					
Interpersonal Quality					
Age	0.004	0.145	-0.002	0.335	None
Gender	-0.063	0.455	0.079	0.349	None
Quality of Life	0.131	≤0.001	-0.174	≤0.001	Covariate and moderator
Environmental quality					
Age	0.003	0.310	0.005	0.057	None
Gender	0.034	0.701	0.313	≤0.001	Moderator
Quality of life	0.161	≤0.001	-0.104	0.017	Covariate and moderator
Administrative quality					
Age	0.001	0.927	0.006	0.045	Moderator
Gender	0.001	0.999	0.018	0.874	None
Quality of life	0.073	0.103	-0.098	0.072	None
Technical Quality					
Age	0.003	0.159	-0.002	0.500	None
Gender	-0.037	0.654	0.249	0.007	Moderator
Quality of life	0.138	0.001	-0.038	0.211	Covariate
Waiting time					
Age	0.004	0.133	0.002	0.504	None
Gender	0.008	0.933	-0.128	0.192	None
Quality of life	0.122	0.002	-0.044	0.296	Covariate
Patient satisfaction => Behavioral attitudes					
Age	0.001	0.831	-0.003	0.353	None
Gender	-0.043	0.625	0.124	0.186	None
Quality of life	-0.033	0.371	0.036	0.369	None

The 3 covariates (Age, Gender, Quality of Life) are tested to be moderators of two relationships: The relationship between service quality and patient satisfaction (first part of the table) and the relationship between patient satisfaction and behavioral intentions (second part of the table).